COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
South Central Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Transcontinental Gas Pipe Line Corporation
1950 Chaptico Road South Hill, Mecklenburg County, Virginia
Permit No. (SCRO) 30860

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Transcontinental Gas Pipe Line Corporation has applied for a Title V Operating Permit for its Mecklenburg County facility. The Department has reviewed the application and has prepared a July 29, 2003 Title V Operating Permit.

Engineer/Permit Contact:_____ Date: October 27, 2003

Air Permit Manager:_____ Date: October 27, 2003

Regional Director:_____ Date:_____

FACILITY INFORMATION

Permittee

Transcontinental Gas Pipe Line Corporation
P. O. Box 1396
Houston, TX 77251-1396

Facility

Compressor Station 167
1950 Chaptico Road South Hill
Mecklenburg County

AFS ID No. 51-117-0050

SOURCE DESCRIPTION

SIC Code 4922 - Transcontinental Gas Pipe Line Corporation (Transco) is an interstate natural gas transmission company. Transco's 1,900-mile pipeline system transports natural gas from production areas in the Gulf Coast region to customers along the eastern seaboard. Transco's compressor stations are used to compress and move the gas along the system. Compression is made possible through the application of natural gas-fired, turbine-driven compressors. Compressor Station 167 consists of two Solar Centaur T4500 natural gas-fired combustion turbines (Ref. M/L1, M/L2), each rated at 40.44 x 10^6 Btu/hr, a NSPS Subpart Kb 12,600-gallon condensate storage tank (Ref. IA6), and ancillary equipment. Compressor Station 167 is a remotely operated compressor station.

The facility is a Title V major source of NOx. This source is located in an attainment area for all pollutants, and is a PSD minor source. The facility is permitted under a minor NSR Permit dated July 29, 2003. This facility has the potential to emit 192.4 tons per year of NOx. Due to this facility's potential to emit over 100 tons per year of a criteria pollutant, Transco is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 9 VAC 5 Chapter 80 Article 1.

COMPLIANCE STATUS

The facility is inspected once a year. This facility was inspected on January 9, 2003, and was deemed to be in compliance to the permit dated July 29, 2003 (and November 15, 1991 permit) and the Title V permit dated October 26, 1998.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

Compressor Station 167 consists of two Solar Centaur T4500 turbines (Ref. M/L1, M/L2) rated at 40.44 x 10^6 Btu/hr, each, and a NSPS Subpart Kb 12,600-gallon condensate storage tank (Ref. IA6). The two natural gas-fired turbines were initially permitted on October 16, 1991, and are subject to the provisions of NSPS Subpart GG, Standards of Performance for Stationary Gas Turbines. Before the turbines were operational, the permittee increased the rated capacity of the turbines from 3,862 HP to 4,271 HP. The permit dated July 29, 2003 supersedes the permit dated July 23, 2003 (and November 15, 1991) to modify and operate. There are no add-on air pollution control device(s) for the gas-fired turbines. The NOx and CO emissions are minimized by the design of the turbines and proper operating and maintenance procedures. Each turbine (Ref. M/L 1, M/L 2), exhausts through a separate stack (Ref. 01, 02).

EMISSIONS INVENTORY

A copy of the 2002 annual emission inventory is attached. Emissions are summarized in the following tables.

2002 Actual Emissions

	2002 Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO_2	PM_{10}	NO_x
Transco Station 167	0.8	3.4	0.2	0.3	11.8

EMISSION UNIT APPLICABLE REQUIREMENTS - (Ref. M/L1, M/L2)

Limitations

The permit dated November 15, 1991 limits fuel to natural gas only, annual natural gas throughput (consumption) for each turbine to 374 x 10^6 ft^3/yr, 0.01% (weight) fuel sulfur content, and 5 % opacity. Since the permitted sulfur limit (0.01 % by weight) is less than the NSPS Subpart GG sulfur limit, the NSPS limit has been streamlined out of the Title V permit. The permit limits (hourly and annual) were calculated using either vendor guaranteed emission factors (NOx, CO, and VOC) and mass balance (SO_2). The permitted emissions from each turbine (Ref. M/L1, M/l2) are limited to:

Pollutant	NSPS emission limit	Hourly emissions	Annual emissions
SO_2	Fuel sulfur content standard in 40 CFR 60.333(b) of 0.8 percent by weight	0.4 lb/hr and 0.01% fuel sulfur content (weight)	1.8 ton/yr
NOx	166 ppmvd @ 15% O_2 & ISO ambient conditions per 40 CFR 60.332	22.0 lb/hr	96.2 ton/yr
CO		6.3 lb/hr	27.6 ton/yr
VOC		1.4 lb/hr	6.1 ton/yr

The NSPS NOx emission rate limit was calculated per the equation in §40 CFR 60.332(a)(2) to be:

$$STD = 0.015 \times \frac{14.4}{Y} + F$$ where: Y is the manufacturer's maximum rated capacity (kJ/w-hr) F is the fuel bound N, and STD is the allowable emissions

The 1991 and 2003 permit(s) did not evaluate or limit PM and PM-10 emissions from the two gas-fired turbines (Ref. M/L1, M/l2). The potential PM-10 (PM=PM-10) emissions (including condensible particulate matter) are calculated using the AP42 Section 3.1, Stationary Gas Turbines, dates 4/2000, emission factor to be:

$$\text{Annual PM-10 (total)} = \frac{2 \times 374 \times 10^6 \text{ ft}^3/\text{yr} \times 1000 \text{ Btu/ft}^3 \times 6.6 \times 10^{-3} \text{ lb/MMBtu}}{1 \times 10^6 \times 2000 \text{ lb/ton}} = 2.47 \text{ tons/yr}$$

Compressor Station 167 is not a major source of PM and PM-10 emissions, and the permittee is only required to pay fees on the PM-10 emissions. Additional testing, monitoring, and recordkeeping for PM/PM-10 is not required.

Monitoring

Transco is a distributor of natural gas for the East Coast. The turbines (Ref. M/L1, M/L2) burn pipeline quality natural gas. Since many of Transco's compressor station's turbines are subject to the provisions of NSPS Subpart GG, Transco has obtained approval for a custom fuel sulfur monitoring program as specified in the EPA Region III in the letter dated April 2, 1991 and EPA Central Office letter April 12, 1996. The sulfur content of the fuel (natural gas) will be monitored according to procedures specified by permit condition in the permit dated July 29, 2003, which incorporates by reference both the provisions of NSPS Subpart GG §40 CFR 60.334 and the custom fuel monitoring schedule. The NSPS Subpart GG monitoring of the nitrogen content of the fuel (pipeline quality natural gas) for the turbines (Ref. M/L1, M/L2), as required by §40 CFR 60.334, has been waived by EPA Region III per the letter dated April 2, 1991. The permit requires the permittee to submit written notification to the Department, within 30 days of the change, as to which fuel monitoring schedule/regime will be used to demonstrate compliance to NSPS Subpart GG.

Due to the low vapor pressure of the condensate and size of the 12,600-gallon storage tank ($40m^3$ < 12,600 gallon >$75m^3$), this tank (Ref. IA6) is subject to only the recordkeeping requirement of NSPS Subpart Kb per 40 CFR 60.116b(b).

Periodic Monitoring

Testing

The two 40.44 MMBtu/hr (heat input) Solar Centaur T-4500 turbines (Ref. M/L1, M/L2) were constructed in 1991 (initially permitted November 18, 1991), and are subject to the provisions of NSPS Subpart GG. The permittee will be required to stack test one of the natural gas-fired turbines in the first (1^{st}) year of the Title V permit to demonstrate compliance to the NSPS Subpart GG and hourly NOx limits. The SO_2 emissions are the result of fuel sulfur content. The SO_2 emissions were established using maximum hourly and permitted annual fuel consumption, maximum fuel sulfur content, and AP42 Section 3.1 emission factors. The permittee will demonstrate compliance to the SO_2 emissions through fuel sulfur monitoring and record keeping. CO and VOC emission rates are the result of the design of the turbine, and will be minimized through proper operating and maintenance practices. The permit requires Transco to have available written operating procedures and maintenance schedules for the turbines, and requires written records of any corrective actions. Compliance to the VOC and CO annual emission limits will be demonstrated through records of fuel consumption. Additional testing is not required for the turbines.

Monthly Observation for Visible Emissions

Compressor Station 167 is a remotely operated facility that has been historically operated at less than 20% (27.2 ton/yr NOx/192.4 ton/yr NOx) of its permitted annual capacity and combusts only pipeline quality natural gas. Monitoring of opacity will require the source to, at least one time per month, observe for the presence of visible emissions from each turbine's (Ref. M/L1, M/L2) exhaust stack (Ref. 01, 02) when these emission units are operating. If visible emissions are observed, the permittee will have the option to take timely corrective action to resume operations without visible emissions or perform a VEE in accordance with 40 CFR 60, Appendix A, Method 9 to assure visible emissions' compliance. The permittee will keep a log of observations, any VEE recordings and any corrective actions. If any emission unit has not operated for any period during the month, this fact shall be noted in the individual log, and the visible emission observation for the idle emission unit will not be required.

No periodic monitoring or testing is required for the 12,600-gallon condensate storage tank (Ref. IA6).

Recordkeeping

The permit requires the Transco to maintain the following records, which include, but not limited to:

The annual throughput of fuel consumption in cubic feet per turbines (Ref. M/L1, M/L2), calculated monthly as the sum of each previous consecutive 12 month period.

Hours of operation per turbine (Ref. M/L1, M/L2), calculated monthly as the sum of each previous consecutive 12 month period.

All fuel monitoring reports.

The equations, emission factors, origin of emission factors, and all supporting documentation for criteria pollutant emissions.

Scheduled and unscheduled maintenance to each turbine (Ref. M/L1, M/L2) and operator training.

Results of all stack tests, visual emissions examinations (VEE), periodic monitoring, and performance evaluations.

- The records of the size condensate storage tank (Ref. IA6) and material stored.

Copies of all notifications.

Reporting

The Title V permit contains the standard testing, malfunction, and compliance reporting requirements in Section V.

Streamlined Requirements

NSPS Subpart GG fuel sulfur limit of 0.8% (weight) has been streamlined out of the Title V permit. The permit dated July 29, 2003 limits the natural gas sulfur content to less than 0.01% (weight).

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by '2.1-20.01:2 and ' 10.1-1185 of the Code of Virginia, and the "Department of Environmental Quality Agency Policy Statement No. 3-2001".

B.2. Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Permits for

Stationary Sources

B.3. Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Permits for Stationary Sources

B. 9 VAC 5-80-80. "Application"
B.2. 9 VAC 5-80-150. "Action on Permit Applications"
B.3. 9 VAC 5-80-80. "Application"
B.4. 9 VAC 5-80-80. "Application"
B.4. 9 VAC 5-80-140. "Permit Shield"
B.5. 9 VAC 5-80-80. "Application"

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

F. 9 VAC 5-50-50. Notification, Records and Reporting
F.1. 9 VAC 5-50-50. Notification, Records and Reporting
F.2. 9 VAC 5-50-50. Notification, Records and Reporting

F.2.a. 40 CFR 60.13 (h). Monitoring Requirements.

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on General Condition F.

U.2.d. 9 VAC 5-80-110. Permit Content
U.2.d. 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction]

INAPPLICABLE REQUIREMENTS

The potential annual HAP emissions from the two turbines (Ref. M/L1, M/L2) are less than 10 tons/yr of any single HAP and 25 tons/yr of all combined HAPs, and this facility is not a major source of toxic air pollutant emissions. The permit dated November 15, 1991 limits the annual consumption of natural gas to 374 x 10^6 ft^3/yr, each, but does not limit HAP emissions. Toluene and formaldehyde are the two HAPs with the largest emission factors per AP42 Section 3.1, Stationary Gas Turbines, dated April 2000.

The annual toluene emissions are calculated to be:

$$\text{toluene} = \frac{2 \times 374 \times 10^6 \text{ ft}^3/\text{yr} \times 1000 \text{ Btu}/10^6 \text{ ft}^3 \times 1.3 \times 10^{-4} \text{ lb}/10^6 \text{ Btu}}{2{,}000 \text{ lb/ton} \times 1.0 \times 10^6 \text{ Btu}} = 0.05 \text{ ton/yr}$$

The annual formaldehyde emissions are calculated to be:

$$\text{formaldehyde} = \frac{2 \times 374 \times 10^6 \text{ ft}^3/\text{yr} \times 1000 \text{ Btu}/10^6 \text{ ft}^3 \times 7.1 \times 10^{-4} \text{ lb}/10^6 \text{ Btu}}{2{,}000 \text{ lb/ton} \times 1.0 \times 10^6 \text{ Btu}} = 0.27 \text{ ton/yr}$$

Compressor Station 167 does not process, store, or upgrade natural gas and is not subject to the provisions of Subpart HH, National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities per 40 CFR 63.760(a).

Compressor Station 167 does not include a glycol dehydration system or storage system. The June 29, 2001 amendment to MACT Subpart HHH states that a ‘‘compressor station that transports natural gas prior to the point of custody transfer, or to a natural gas processing plant (if present) is not considered a part of the natural gas transmission and storage source category.’’ Therefore, Compressor Station 167 is not subject to the provisions of Subpart HHH—National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities per § 63.1270(a).

This facility is not a major source of HAPs emissions, therefore the provisions of the proposed Stationary Combustion Turbines MACT, 40 CFR Part 63 Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, will not apply to this facility.

Since there are no add-on air pollution control devices and each turbine's (Ref. M/L1, M/L2) NOx emissions are limited to less than 100 ton/yr, Compliance Assurance Monitoring (CAM) is not required for this facility.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110. Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
IA1	Used Oil Sump	5-80-720 C.	N/A	129 gallons
IA2	Used Oil/Water Sump	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA3	Wastewater/Oil Separator (#10)	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA4	Wastewater Storage Tank (#11)	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA5	Used Oil Storage Tank (#12)	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA7	Lube Oil Storage Tank	5-80-720 C.	N/A	226 gallons
IA8	Condensate Storage Tank (#39)	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA9	Parts Washer	5-80-720 B.	VOCs (< 5 ton/yr)	NA
IA10	M & R Condensate Drip Tank	5-80-720 C.	N/A	89 gallons

CONFIDENTIAL INFORMATION

The permittee has not claimed any information to be confidential.

PUBLIC PARTICIPATION

The draft permit will be place on public notice in the Mecklenburg Sun from July 30, 2003 to August 29, 2003.